



State of Utah  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

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Division Director

February 11, 2003

CERTIFIED RETURN RECEIPT

7099 3400 0016 8896 2741

O. Jay Gatten  
Basin Perlite Company  
P.O. Box 490  
533 South Industrial Loop Road  
Milford, Utah 84751

Re: Initial Review of Notice of Intention to Amend Large Mining Operations, Basin Perlite Mining Company, Pearl Queen Mine, M/001/027, Beaver County, Utah

Dear Mr. Gatten:

The Division has completed a review of your draft Notice of Intention to Amend Large Mining Operations for the Pearl Queen Mine, located in Beaver County, Utah. The original amendment was received September 12, 2002, with a subsequent amendment received October 7, 2002 and a final consolidated amended plan received December 16, 2002. After reviewing the latest information, the Division has the following comments which will need to be addressed before tentative approval may be granted.

The comments are listed below under the applicable Minerals Rule heading. Please format your response in a similar fashion. **Please address only the items requested in this review response, or you may send replacement pages of the original notice using redline and strikeout, so we can see what changes have been made. After the notice is accepted, we will then ask that you send us two copies of the complete and corrected plan. Upon finalization of the permit, we will return one copy stamped "approved" for your records.** Please provide a response to this review by March 11, 2003.

The Division will suspend further review of the mine NOI until your response to this letter is received. If you have any questions in this regard please contact me, Lynn Kunzler, Tom Munson, Paul Baker or Doug Jensen of the Minerals Staff. If you wish to arrange a meeting to sit down and discuss this review, please contact us at your earliest convenience. Thank you for your cooperation in completing this permitting action.

Sincerely,

for D. Wayne Hedberg  
Permit Supervisor  
Minerals Regulatory Program

jb

Attachment: Review

O:\M001-Beaver\M01027-PearlQueen\final\amd-REV2.doc

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0002

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| 5. Signature - Agent<br><i>Janet Webster</i>   |  | 6. Signature - Agent<br><i>Janet Webster</i>            |  |
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O. JAY GATTEN - BASIN PERLITE CO

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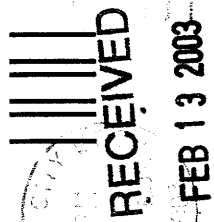
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DIV. OF OIL, GAS & MINING

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102595-99-M-2087

**INITIAL REVIEW OF AMENDED NOTICE OF INTENTION  
TO COMMENCE LARGE MINING OPERATIONS**

**Basin Perlite Company  
Pearl Queen Mine**

**M/001/027**

**R647-4-105 - Maps, Drawings & Photographs**

**105.1 Topographic base map, boundaries, pre-act disturbance**

The latest plan does not contain a reclamation treatments map which indicates the final reclamation plan for the entire mine site. Please provide this map showing areas of the site to receive various reclamation treatments. These areas should be shaded, cross-hatched or color coded to identify which reclamation treatments will be applied. Examples of reclamation treatments may include, but are not limited to, ripping, regrading, replacing soil, fertilizing, mulching, broadcast seeding, drill seeding and/or hydroseeding. (DJ)

Exhibit E map indicates that reclamation is proposed for areas south of the Schoo Pit, which are shown as areas for the waste-rock containment structures. What is the schedule for this reclamation? (DJ)

**R647-4-106 - Operation Plan**

**106.4 Nature of materials mined, waste and estimated tonnages**

The NOI states "It has been determined by air quality that this material is stable and is not a consideration regarding air quality." Please include a copy of the letter from Air Quality stating that the crusher at the site does not require a permit. (DJ)

**106.5 Existing soil types, location, amount**

The application says the soil layer is assumed to be 12 inches thick and contains greater than 50 percent rubble perlite. Exhibits L and L1 are results of laboratory analyses of the soil and show no physical or chemical limitations other than possible nutrient deficiencies which are common in rangeland soils. (PBB)

The information about the extent of soils needs to be based on direct observations, such as a soil survey, rather than assumptions. The Division does not necessarily question the validity of the statement in the application, but it is likely there are areas where more or less soil is available than what is stated in this section. One of the purposes of a soil survey is to locate areas where there is more or less soil so all available soil can be salvaged and there are no soil deficits when the site is reclaimed. (PBB)

Additional baseline information may be available in a report that was supposed to have been in Appendix V of the original notice of intention. The Division's reviews of this notice indicate this appendix was not received, but if this report is still available, it may provide the baseline information needed. It is not known whether the Appendix V report includes soils information for the expansion areas. (PBB)

#### **106.6 Plan for protecting & redepositing soils**

There is a berm of overburden material on the southeast side of the Schoo pit which the operator intends to use as soil in reclamation. This berm is shown on Exhibit E. This exhibit also shows the locations of soil stockpiles at the Pearl Queen Mine. (PBB)

The application needs to show locations of planned future soil stockpiles, particularly in the Schoo Pit area. The plan also needs to identify how much soil will be salvaged. (PBB)

The operator commits to salvage soil which is estimated to be about twelve inches thick. As discussed in Section 106.5 above, the soil salvage plan needs to be based on observed quantities of soil, because it is likely there are areas with deeper or shallower soils. If equipment operators assume there is 12 inches of soil over the whole site, they are likely to salvage all available soil where there is less than 12 inches, but only 12 inches when there is more than this. This would lead to a deficit that might be prevented by having site specific soils data. (PBB)

Although the operator commits in this section of the application to remove topsoil prior to mining, Section 111.12 implies the only soil to be used for reclamation at the Schoo Pit is the small quantity of a combination of soil and perlite rubble that a previous operator stockpiled. The application needs to contain a definitive commitment to salvage soil from areas of the Schoo Pit that were not previously disturbed, including the waste disposal areas. The waste disposal areas are within a drainage where there may be larger quantities of soil that could make up for deficits in other areas. The application also needs to state the total volume of soil that will be harvested and replaced for each area of the mine. (PBB)

According to the application, soil stockpiles are not covered, but are held by naturally revegetated plants. In most cases, natural revegetation is slow and, at least for the first few years, consists of weeds. Unless the soil is going to be used very soon, the operator should seed the topsoil stockpiles with a grass mixture to prevent erosion, maintain soil viability, and reduce the number of weeds and weed seed that could get in the soil. The seed mix in Exhibit N could be used for topsoil stabilization; it was apparently recommended by the Division for this purpose. (PBB)

Exhibits D3, E, and E1 show topsoil stockpile locations at the Pearl Queen Mine, but the locations differ on the three maps. Please resolve these discrepancies. (PBB)

Neither the existing nor the revised plan contains or requests a variance from soil salvage requirements in the Pearl Queen waste rock disposal area. There is no indication that the operator has been saving soil in this steep area. The operator has assured the Division there will be soil available to reclaim this area, but the operator needs to provide calculations showing how much soil is available and how much area can be reclaimed with this soil. In addition, unless the operator requests and the Division approves a variance, the rules require soil salvage in all disturbed areas. Soil should be salvaged from the waste rock disposal area, unless otherwise approved by the Division. (PBB)

There needs to be a minimum of two feet of unconsolidated material on the recontoured areas before the soil material is applied. Overburden material should be salvaged for this purpose, and it would be acceptable to include some waste material with the overburden. (DJ and PBB)

The operator has requested a variance so that the slope of the waste rock disposal area could be up to 60 degrees (assumed to be from horizontal). Please provide additional information about how soil can be distributed on this slope and how the slope can be revegetated. The Division's rules state that waste piles shall be regraded to a stable configuration and shall be sloped to minimize erosion while providing for successful revegetation, and the Division questions whether it is possible to meet this standard on a 60-degree slope. (PBB)

The application needs to discuss what soil or soil substitute will be used in the portions of the Schoo Pit that were previously disturbed. There is discussion in the current plan about a berm that contains about 500 tons of soil that would be used in this area, but this is not adequate for complete reclamation of the site. Assuming this soil or combination soil/overburden material has a bulk density of 1.2, there would be enough material to cover the 4.86 acres of previously disturbed area  $\frac{3}{4}$  inch deep. This is not adequate even to achieve the reduced vegetation cover approved in the variance (60 percent of the cover of adjacent areas). Please supply a plan showing how adequate soil or substitute soil will be provided to achieve the vegetation cover success standard. The Division suggests using excess soil from other areas or amending overburden with composted manure. (PBB)

**106.7 Existing vegetation - species and amount**

This section of the application says vegetation cover was estimated in 1995 as 20 percent with the dominant species being western wheatgrass, big sage, Utah juniper, pinyon, and Indian ricegrass. The stated cover value differs from the Division's observation and also from information in another section of the application. The Division's September 4, 1996, review says vegetation cover is 30 percent, and in a letter dated February 19, 1997, the operator agreed with this value and that the revegetation success standard would be 21 percent cover. In the variance section (VIII), the application says revegetation of the Schoo Pit will be considered adequate when 60 percent of the original vegetation cover

has been restored (24 percent of cover). This implies that the premining cover was 40 percent. This same variance section says revegetation on the slope of the north portion of the waste disposal area will be considered adequate when 60 percent of the original vegetative cover has been restored (21 percent of vegetative cover) implying that the original vegetation cover in this area was 35 percent. (PBB)

Please indicate which value is accurate, 20, 30, 35, or 40 percent. If different values should be applied to different areas, please delineate those areas for which the different values apply. (PBB)

**106.9 Location & size of ore, waste, tailings, ponds**

The plan states a larger barricade of boulders and smaller rocks will be built to keep perlite material within the permit area. Please indicate on Exhibit D1 the approximate location of this barricade. (DJ)

This section of the application states that overburden material from the proposed mine area of the Pearl Queen pit will be stockpiled on the margins or be used to recontour the mined out area. Overburden should also be salvaged from the Schoo pit area for use in final reclamation. Please indicate the location of these stockpiles. The Division suggests that overburden material from both pits be salvaged to supplement any soil deficits that may exist during final reclamation. (DJ)

A calculation of the quantity of soil presently being stored in stockpiles at the Pearl Queen pit is needed to assure that the amount available is sufficient to reclaim the disturbance. (DJ)

**R647-4-107 - Operation Practices**

**107.2 Drainages to minimize damage**

The drainage area adjacent to the Schoo Pit, which will be used as a storage area for perlite fines until the pit is large enough to accept these fines, will be captured at the head of the small draw and diverted through the pit. Please show this diversion on a map and describe this diversion of surface water in the plan. (TM)

**107.3 Erosion control & sediment control**

A description of the lack of runoff, as evidenced by the amount of litter in the drainages is appropriate. Please provide this discussion in the plan as justification for the lack of sediment and runoff controls. It is also appropriate to talk about any compacted areas, i.e. pits, pads, etc., and how any new compacted disturbed areas will be drained into the existing pits where it will infiltrate and not contribute to offsite drainage. (TM)

**R647-4-109 - Impact Assessment**

**109.2 Impacts to threatened & endangered wildlife/habitat**

The application says that, to the operator's knowledge, the area is not a critical habitat for any large animals. Contrary to this statement, the Division's files contain a letter from the Governor's Office of Planning and Budget with the following comments from the Division of Wildlife Resources:

The proposed mine location occurs within critical valued mule deer wintering range (11/1 to 5/15) and within nesting habitat for the state threatened ferruginous hawk (4/10 to 7/15) and other raptors (2/15 to 8/15).

The application should be modified accordingly. This letter also recommends certain mitigation steps that might be taken, such as vegetation treatments and avoiding construction during certain times of the year if there are active raptor nests nearby, but it is not certain whether any of these recommendations were ever implemented. Please provide information about any proposed or completed mitigation. (PBB)

**109.3 Slope stability, erosion control, air quality, safety**

The initial plan states that no highwalls will exist at the site due to the methods being used to mine the perlite. The plan also states the existence of benches is a possibility. A reclamation plan for these benches should be included in the plan, if the possibility exists. Proposed bench locations should also be shown on the site map. (DJ)

**R647-4-110 - Reclamation Plan**

**110.1 Roads, highwalls, slopes, drainages, pits, etc., reclaimed**

Perlite waste material in the drainage north of the Pearl Queen pit will be pushed with a dozer to a final slope not to exceed 60 degrees. Please state whether this slope configuration will be 60 degrees from vertical or horizontal. If this final slope is to be 60 degrees from horizontal, please provide an engineering study or other supporting documentation demonstrating the stability of a slope at this angle. (DJ)

The amended plan states that perlite plant waste will be mixed and layered with waste rock and overburden material. Section 106.9 of the approved NOI states that the overburden from the proposed mine area will be stockpiled on the margins and used to fill and re-contour mined out area as reclamation takes place. If this material is used to mix with the plant waste will there be enough material left to be used for final site recontouring? (DJ)

**110.5 Revegetation planting program**

The operator acknowledges the Division's recommendation that the soil be amended by adding five tons per acre of composted manure, and the subsequent paragraph contains

justification for not committing to this recommendation. Composted manure may not be needed in most of the area, but some kind of organic matter addition is probably needed for the previously disturbed portions of the Schoo Pit. There is essentially no soil for this area, and the overburden may not provide enough water and nutrient holding capacity for revegetation. If the operator is able to use soil in this area rather than overburden, no fertilizer should be necessary, but if overburden is used as a substitute soil, the operator needs to amend the overburden with organic material. The application needs to contain a commitment to this effect. (PBB)

The existing plan contains commitments to spread the topsoil, then to disc or rip the soil surface to a depth of six inches, to apply fertilizer according to Division recommendations, and to seed using a rangeland or farm drill. This discussion is missing from the application, but the Division believes the seeding plan should be modified. The area contains enough steep slopes that the operator should not disc the site. Depending on the degree of compaction, ripping should be done at least twelve inches deep parallel to the contour. Areas that are heavily compacted, such as roads, should be ripped a minimum of two feet deep. The plan should be modified to contain these commitments. (PBB)

Exhibit N has a seed mix which would be used for reclamation. The seed mix in Exhibit N was recommended by the Division for topsoil stabilization and not for final reclamation. The Division's September 4, 1996, review of the operator's application contained a recommended seed mix which the operator subsequently accepted. This mix is more diverse than the one in the current application and should be used for final reclamation. The application should be revised accordingly. (PBB)

A farm or rangeland drill is likely to reduce roughness which the Division considers critical at this and most other sites. In addition, it may be very difficult to operate a drill on slopes like those proposed in the plans. Instead, the seed should be broadcast seeded immediately following ripping. Note, however, that the seed mix recommended by the Division in 1996 contains a footnote that the quantities of seed should be increased by 50 percent if it is broadcast seeded. (PBB)

Ripping or discing may be extremely difficult or impossible on 60-degree slopes. Please provide information about what treatments will be used in these areas to roughen the surface. Some kind of roughening is needed to reduce erosion and to hold seed and moisture on the slope. (PBB)

#### **R647-4-111 - Reclamation Practices**

##### **111.5 Land capable of post mining land use**

According to the application, disturbed lands will be reclaimed to allow additional mining and livestock and wildlife use. Mining cannot be a postmining land use and needs to be eliminated from the list of land uses. (PBB)



The operator is proposing that some slopes be reclaimed to 60 degrees (assumed to be from horizontal), but a 60-degree slope is too steep for a grazing postmining land use. Livestock will not use a slope this steep, and guidelines from the Bureau of Land Management state that slopes steeper than 2h:1v (50 percent) are not capable of supporting a grazing land use. The Division recognizes that some natural slopes in the area are steeper than 50 percent, but the proposed slope for the waste rock area would be steeper than most or all natural slopes except cliffs. For these reasons, the application needs to discuss what the postmining land uses will be for the waste rock disposal areas at the Pearl Queen Mine. (PBB)

**111.7 Highwalls stabilized at 45 degrees or less**

If the development of a highwall steeper than 45 degrees is a possibility during the life of this mine, costs to reclaim this feature should be included in the surety estimate unless a variance is approved by the Division. (DJ)

**111.12 Topsoil redistribution**

The Division is concerned that the wording of Section 111.12 of the application implies soil will not be salvaged from the areas of the Schoo Pit that were not previously disturbed. This concern, together with other issues, is discussed in Section 106.6 of this review. (PBB)

**111.13 Revegetation**

This section of the application indicates revegetation at the Pearl Queen Pit area is considered complete when 21 percent of the vegetative cover is replaced. It appears from the application that this would be a variance from the normal revegetation standard, because the section of the application dealing with variances says revegetation will be considered adequate on the slope of the north portion of the waste disposal area when 60 percent of the original vegetative cover has been restored (21 percent of vegetative cover).

The standard for both of these areas needs to be 70 percent of the vegetation cover in surrounding areas unless a variance is granted. It is not clear what the cover is in surrounding areas, but please modify this section of the application to reflect vegetation cover values and the correct success standard when information about the vegetation cover has been clarified. (PBB)

The application also says revegetation is considered complete at the Schoo Mine when 60 percent of the surrounding vegetation cover is replaced (about 24 percent). Although the Division has allowed a variance for previously disturbed portions of the Schoo Pit, this sentence implies there would be a variance for the entire area, including any new disturbance on to previously undisturbed areas. Please clarify the revegetation success standards in accordance with the approved variance, pre-existing and current vegetation cover values, and rule R647-4-111.13.11. (PBB)

Additional information about variances, including a suggestion concerning the cover standard for the waste disposal area, is in Section R647-4-112 of this review. (PBB)

**R647-4-112 - Variance**

The application says variances have been granted to allow: 1) 60 percent of the original vegetation cover on 4.86 acres of the Schoo Pit, and, 2) 60 percent of the original vegetation cover and a slope not exceeding 60 degrees on the slopes of the north portion of the waste disposal area at the Pearl Queen Pit.

The application also says, "As part of the Large Mine Permit Revision (approved 8/4/01) a variance was requested in the Schoo Pit area so that reclamation will be complete when 60 percent of the original vegetation cover has been restored." This statement could be interpreted to mean there is a variance for all of the Schoo Pit and not just for the previously disturbed portions. The Division has granted a variance for only the previously disturbed area of the Schoo Pit. The application needs to clarify that the variance is only for the previously disturbed area and not for new disturbances. (PBB)

The mine plan dated July 2, 2001, and approved August 24, 2001, does not contain a variance for the slope or vegetation cover for any of the waste disposal area of the Pearl Queen Pit; therefore, the statement in the application that variances have been granted for this area needs to be removed. Justification for these variances would need to be included in the application before the Division could consider them. (PBB)

As an alternative to a variance from the revegetation cover standard for the waste disposal area, the Division offers the following suggestion: The waste disposal area is located on a very steep slope, and vegetation cover prior to any disturbance was probably low compared to many other areas near the mine. The cover of reestablished vegetation on the waste disposal area could be compared with the amount of vegetation on similar nearby slopes. If the operator decides to pursue this option, the application would need to contain information about the vegetation cover on slopes similar to the slope north of the Pearl Queen Pit. (PBB)

**R647-4-113 - Surety**

The Division is concerned whether soil will be salvaged from the waste disposal areas, and this section of the application says no excavation will be done. Please state whether "no excavation" applies to soil salvage. There is also some discussion in this section about less expensive methods than bringing in and grading 2-3 feet of overburden and topsoil. While the Division would consider alternative revegetation methods, we need to see and approve specific proposals before adjusting the bond in accordance with those methods. (PBB)

The cover letter projects 33.85 acres total disturbance for the life of mine, to be considered for permitting. Of the 33.85 proposed acres, a total of 27.41 acres would be disturbed during the first five years of

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Initial Review of Amendment  
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operation. Section IX of the application states that 28.71 acres will be disturbed in the first five years.  
Please clarify this discrepancy. (DJ)

A blank copy of the Division's Reclamation Surety Estimate form will be supplied for your use to calculate the required surety for this site. (DJ)